

DOCKET NO.: PUAS-0016/98-152-2-1

PATENT #25

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

RECEIVED

FEB 08 2006

OFFICE OF PETITIONS

In Re Application of:
Stephen R. Forrest, Milind R. Gokhale
and Pavel Studenkov

Confirmation No.: 8094

Application No.: 09/982,001

Group Art Unit: 2874

Filing Date: October 18, 2001

Examiner: Ullah, Akm E.

For: TWIN WAVEGUIDE BASED DESIGN FOR PHOTONIC INTEGRATED
CIRCUITS

VIA HAND DELIVERY

Date of Deposit: February 8, 2006

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Pursuant to 37 CFR § 1.56 and in accordance with 37 CFR §§ 1.97-1.98, information relating to the above-identified application is hereby disclosed. Inclusion of information in this statement is not to be construed as an admission that this information is material as that term is defined in 37 CFR § 1.56(b).

- ☒ In accordance with § 1.97(b), since this Information Disclosure Statement is being filed either within three months of the filing date of the above-identified application, within three months of the date of entry into the national stage of the above identified application as set forth in § 1.491, before the mailing date of a first Office Action on the merits of the above-identified application, or

before the mailing date of a first Office Action after the filing of request for continued examination under § 1.114, no additional fee is required.

- ☐ In accordance with § 1.97(c), this Information Disclosure Statement is being filed after the period set forth in § 1.97(b) above but before the mailing date of either a Final Action under § 1.116 or a Notice of Allowance under § 1.311, or before an action that otherwise closes prosecution in the application, therefore:

- ☐ Certification in Accordance with § 1.97(e) is attached; or
- ☐ The fee of **\$180.00** as set forth in § 1.17(p) is attached.

- ☐ In accordance with § 1.97(d), this Information Disclosure Statement is being filed after the mailing date of either a Final Action under § 1.113 or a Notice of Allowance under § 1.311 but before, or simultaneously with, the payment of the Issue Fee, therefore included are: Certification in Accordance with § 1.97(e); and the submission fee of **\$180.00** as set forth in § 1.17(p).

- ☒ Copies of reference numbers **40 – 99** listed on the attached Form PTO-1449 are enclosed herewith.

- ☐ Copies of reference numbers on the attached Form PTO 1449 are not required to be submitted pursuant to 37 CFR § 1.98(a)(2)(i).

- ☐ Copies of references - are not being submitted because they were previously cited by or submitted to the U.S. Patent and Trademark Office in patent application number , filed for which a claim for priority under 35 U.S.C. § 120 has been made in the instant application.

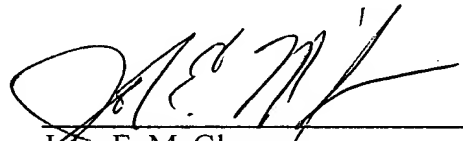
- ☐ The relevance of those listed references which are not in the English language is as follows:

There are no listed references which are not in the English language.

Enclosed is a copy of a Communication Pursuant to Article 96(2) EPC dated March 3, 2005 that was received in a related application before the European Patent Office and identifies several references.

Please charge any deficiency or credit any overpayment to Deposit Account No. 23-3050. This form is submitted in duplicate.

Date: February 7, 2006



John E. McGlynn
Registration No. 42,863

WOODCOCK WASHBURN LLP
One Liberty Place - 46th Floor
Philadelphia, PA 19103
Telephone: (215) 568-3100
Facsimile: (215) 568-3439

Form PTO-1449 Modified List of Patent and Publications Cited by Applicant (Use several sheets if necessary) U.S. Department of Commerce Patent and Trademark Office		Docket No. PUAS-0016/ 98-152-2-1	Application No. 09/982,001
		Applicant Stephen R. Forrest, et al.	
		Filing Date October 18, 2001	Group 2874
		Confirmation No. 8094	
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)			
	40	Alferness, R.C., et al., "Vertically coupled INGAASP/INP buried rib waveguide filter," <i>Applied Physics Letts.</i> , 1991 , 59(20), 2573-2575	
	41	Bach, L., et al., "Wavelength stabilized single-mode lasers by coupled micro-square resonators," <i>IEEE Photonics Techn. Letts.</i> , 2003 , 15, 377-379	
	42	Bennett, S., et al., "1.8-THz bandwidth, zero-frequency error, tunable optical comb generator for DWDM applications," <i>IEEE Photonics Techn. Letts.</i> , 1999 , 11(5), 551-553	
	43	Bruckner, H.J., et al., "Taper-Waveguide integration for polarization insensitive InP/InGaAsP based optical amplifiers," <i>Electron. Lett.</i> , 1994 , 30(16), 1290-1291	
	44	Claasen, A., et al., "Comparison of diodes and resistors for measuring chip temperature during thermal characterization of electronic packages using thermal test chips," <i>IEEE 13th Ann. Semiconductor Thermal Measurement & Management Symposium</i> , 1997 , 198-209	
	45	"Coupled cavity modelocked lasers," <i>Applied Physics</i> , http://fb6www.uni-paderborn.de , downloaded March 30, 2005 , 3 pages	
	46	"Current work on composite-resonator vertical-cavity lasers," <i>Coupled Cavity VCSELs</i> , http://vcsel.micro.uiuc.edu , downloaded March 30, 2005 , 4 pages	
	47	den Besten, J.H., et al., "An integrated coupled-cavity 16-wavelength digitally tunable laser," <i>IPR</i> , 2002 , 1-3	
	48	Forrest, S.R., et al., "Integrated photonics using asymmetric twin-waveguide structures," <i>IEEE</i> , 2000 , 13-16	
	49	Fredkin, E., et al., "Conservative Logic," <i>Int. J. Theor. Phys.</i> , 1982 , 21(3/4), 219-253	
EXAMINER		DATE CONSIDERED	

Form PTO-1449 Modified List of Patent and Publications Cited by Applicant (Use several sheets if necessary) U.S. Department of Commerce Patent and Trademark Office		Docket No. PUAS-0016/ 98-152-2-1	Application No. 09/982,001
		Applicant Stephen R. Forrest, et al.	
		Filing Date October 18, 2001	Group 2874
		Confirmation No. 8094	
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)			
	50	Gokhale, M.R., et al., "Uncooled, 10Gb/s 1310 nm electroabsorption modulated laser," <i>presented at OFC 2003 (PD-42), Atlanta, USA, 2003</i> , 4 pages	
	51	Hamamoto, et al., "Insertion-loss-free 2x2 InGaAsP/InP optical switch fabricated using bandgap energy controlled selective MOVPE," <i>Electron. Lett.</i> , 1995 , 31(20), 1779-1781	
	52	Hammond, B., et al., "Integrated wavelength locker for turnable laser applications," <i>15th Ann. Meeting of the IEEE Lasers & Electro-Optics Soc.</i> , 2002 , 2, 479-480	
	53	He, J.-J., et al., "Photonic integrated circuits and components using quantum well intermixing," <i>Integrated Optoelectronics, Proc. of SPIE</i> , 1996 , 2891, 2-9	
	54	Johnson, J.E., et al., "Fully stabilized electroabsorption-modulated tunable DBR laser transmitter for long-haul optical communications," <i>IEEE J. on Selected Topics in Quantum Electronics</i> , 2001 , 7, 168-177	
	55	Kanjamala, A.P., et al., "Wavelength switching in multicavity lasers," <i>Am. Inst. Of Physics</i> , 1997 , 71(3), 300-302	
	56	Newkirk, M.A., et al., "1.55 μ m multiquantum well semiconductor optical amplifier with low gain ripple and high coupling efficiency for photonic circuit integration," <i>Electron. Lett.</i> , 1993 , 29(5), 443-444	
	57	O'Dowd, R., et al., "Frequency plan and wavelength switching limits for widely tunable semiconductor transmitters," <i>IEEE J. Selected Topics in Quantum Electrons</i> , 2001 , 7, 259-269	
	58	Oh, K.R., et al., "2x2InGaAsP/InP laser amplifier gate switch arrays using reactive ion etching," <i>Electron. Lett.</i> , 1996 , 32(1), 39-40	
	59	Rabus, D.G., et al., "MMI-coupled ring resonators in GaInAsP-InP," <i>IEEE Photonics Techn. Letts.</i> , 2001 , 13, 812-814	
	60	Rabus, D.G., et al., "Resonance frequency tuning of a double ring resonator in GaInAsP/InP: Experiment and simulation," <i>Jpn. J. Appl. Phys.</i> , 2002 , 41, 1186-1189	
EXAMINER		DATE CONSIDERED	

Form PTO-1449 Modified List of Patent and Publications Cited by Applicant (Use several sheets if necessary) U.S. Department of Commerce Patent and Trademark Office		Docket No. PUAS-0016/ 98-152-2-1	Application No. 09/982,001
		Applicant Stephen R. Forrest, et al.	
		Filing Date October 18, 2001	Group 2874
		Confirmation No. 8094	
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)			
	61	Rabus, D.G., et al., "High-Q channel-dropping filters using ring resonators with integrated SOAs," <i>IEEE Photonics Techn. Letts.</i> , 2002 , 1, 1442-1444	
	62	Saini, S.S., et al., "Compact mode expanded lasers using resonant coupling between a 1.55 μ m InGaAsP tapered active region and an underlying coupling waveguide," <i>IEEE Photonics Technology Letters</i> , September 1998 , 10(9), 1232-1234	
	63	Sarlet, G., et al., "Control of widely tunable SSG-DBR lasers for dense wavelength division multiplexing," <i>IEEE J. Lightwave Techn.</i> , 2000 , 18, 1128-1138	
	64	Shi, H., et al., "Relative intensity noise measurements of a widely tunable sampled-grating DBR laser," <i>IEEE Photonics Techn. Letts.</i> , 2002 , 14, 759-761	
	65	Silva, C.F.C., et al., "A dense WDM source using optical frequency comb generation and widely tunable injection-locked laser filtering techniques," Department of Electrical Engineering, year not available, 4 pages	
	66	Studenkov, P.V., et al., "Monolithic integration of an all-optical Mach-Zehnder demultiplexer using an asymmetric twin-waveguide structure," <i>IEEE Photonics Techn. Lett.</i> , 2001 , 13, 600-602	
	67	Suematsu, Y., et al., "Integrated twin-guide AlGaAs laser with multiheterostructure," <i>IEEE J. Quantum Electron.</i> , 1973 , QE-11(7), 457-460	
	68	Tatsuno, K., et al., "50 GHz spacing, multi-wavelength tunable locker integrated in a transmitter module with a monolithic-modulator and a DFB-laser," <i>Optical Fiber Commun. Conf.</i> , 2001 , TuB5-1 - TuB5-4	
	69	Tauke-Pedretti, A., et al., "High saturation power and high gain integrated photoreceivers," <i>IEEE Photonics Technology Letts.</i> , 2005 , 17(10), 2167-2169	
	70	Utaka, K., et al., "Measurement of coupling coefficient and coupling length of GaAs/AlGaAs integrated twin-guide injection lasers prepared by liquid-phase epitaxy," <i>Trans. IECE Japan</i> , 1979 , E-62, 319-323	
	71	Van, V., et al., "Optical signal processing using nonlinear semiconductor microring resonators," <i>IEEE J. on Selected Topics in Quantum Electronics</i> , 2002 , 8, 705-713	
	72	Vusirikala, V., et al., "Compact mode expanders using resonant coupling between a tapered active region and an underlying coupling waveguide," <i>IEEE Photonics Techn. Letts.</i> , 1998 , 10(2), 203-205	
EXAMINER		DATE CONSIDERED	

Form PTO-1449 Modified List of Patent and Publications Cited by Applicant (Use several sheets if necessary) U.S. Department of Commerce Patent and Trademark Office		Docket No. PUAS-0016/ 98-152-2-1	Application No. 09/982,001
		Applicant Stephen R. Forrest, et al.	
		Filing Date October 18, 2001	Group 2874
		Confirmation No. 8094	
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)			
	73	Wang, H., et al., "A fully integratable, 1.55- μ m wavelength, continuously tunable asymmetric twin-waveguide distributed bragg reflector laser," <i>IEEE Photonics Techn. Lett.</i> , 2003 , 118-1191	
	74	Wei, J., et al., "A high-responsivity high-bandwidth asymmetric twin-waveguide coupled InGaAs-InP-InAlAs avalanche photodiode," <i>IEEE Photonics Techn. Lett.</i> , 2002 , 14, 1590-1592	
	75	Woodward, S.L., et al., "RIN in multisection MQW-DBR lasers," <i>IEEE Photonics Technology Letts.</i> , 1990 , 2, 104-108	
	76	Woodward, S.L., et al., "A control loop which ensures high side-mode-suppression ratio in a tunable DBR laser," <i>IEEE Photonics Techn. Letts.</i> , 1992 , 4, 417-419	
	77	Xia, F.N., et al., "Monolithic integration of a semiconductor optical amplifier and a high bandwidth p-i-n photodiode using asymmetric twin-waveguide technology," <i>IEEE Photonics Techn. Lett.</i> , 2003 , 15, 452-454	
	78	Xu, L., et al., "Monolithic integration of an InGaAs-InP MQW laser/waveguide using a twin-guide structure with a mode selection layer," <i>IEEE Photon. Technol. Lett.</i> , 1997 , 9, 569-571	
	79	Yakoyama, Y., et al., "Multiwavelength locker integrated wide-band wavelength-selectable light source module," <i>IEEE Photonics Technology Letts.</i> , 2003 , 15, 290-292	
EXAMINER		DATE CONSIDERED	

Form PTO-1449 Modified List of Patent and Publications Cited by Applicant (Use several sheets if necessary) U.S. Department of Commerce Patent and Trademark Office				Docket No. PUAS-0016/ 98-152-2-1		Application No. 09/982,001	
				Applicant Stephen R. Forrest, et al.			
				Filing Date October 18, 2001		Group 2874	
				Confirmation No. 8094			
U. S. PATENT DOCUMENTS							
Examiner Initial		Document No.	Date	Name	Class	Subclass	
	80	5,500,867	03/19/96	Krasulick	372	38.02	
	81	5,574,742	11/12/96	Ben-Michael, et al.	372	45	
	82	5,715,268	02/03/98	Lang, et al.	372	50	
	83	6,215,295 B1	04/10/01	Smith, III	324	95	
	84	6,246,965	06/12/01	Cockerham, et al.	702	85	
	85	6,031,851	02/29/00	Shimizu, et al.	372	18	
	86	6,330,378	12/11/01	Forrest, et al.	385	14	
	87	6,330,387 B1	12/11/01	Salamon, et al.	385	129	
	88	6,483,863 B2	11/19/02	Forrest, et al.	372	50	
	89	6,519,374	02/11/03	Stook, et al.	385	2	
	90	6,795,622 B2	09/21/04	Forrest, et al.	385	50	
	91	6,819,814 B2	11/16/04	Forrest, et al.	385	14	
	92	2002-0031297 A1	03/14/02	Forrest, et al.	385	28	
	93	2002-0097941 A1	07/25/02	Forrest, et al.	385	1	
	94	2003-0012244 A1	01/16/03	Krasulick, et al.	372	50	
	95	2004-0096175 A1	05/20/04	Tolstikhin	385	131	
EXAMINER				DATE CONSIDERED			

Form PTO-1449 Modified List of Patent and Publications Cited by Applicant (Use several sheets if necessary) U.S. Department of Commerce Patent and Trademark Office				Docket No. PUAS-0016/ 98-152-2-1		Application No. 09/982,001	
				Applicant Stephen R. Forrest, et al.			
				Filing Date October 18, 2001		Group 2874	
				Confirmation No. 8094			
FOREIGN PATENT DOCUMENTS							
Examiner Initial		Document No.	Date	Country	Translation		
					YES	NO	
	96	WO 03/007057 A3	01/23/03	PCT			
	97	WO 03/102678 A1	12/11/03	PCT			
	98	0 263 640 B1	01/07/93	EP			
	99	2 337 449	07/29/77	FR	X (p. 1-5)		
EXAMINER				DATE CONSIDERED			